

**ABSTRACT**

Compositions and methods for modulating a DNA repair process in vivo or in vitro are provided. One aspect of the disclosure provides a pharmaceutical composition including a DNA repair modulator. The DNA repair modulator includes, but is not  
5 limited to, compositions such as polypeptides, for example antibodies; modified polypeptides; and branched or unbranched aliphatic, cycloaliphatic, substituted aliphatic, aromatic hydrocarbons, or heterocyclic carbon-based compounds that associate with a DNA repair polypeptide, for example, DNA -PKcs.